



## **Appendix 1-A**

### **A-1 AUTO PARTS WILMINGTON, DELAWARE**

**SIRB ID: DE-1172**



## GENERAL SITE INFORMATION

**Site Name:** A-1 Auto Parts

**SIRB ID Number:** DE-1172

**Site Location and Description:** The A-1 Auto Parts property is located in the vicinity of the south side of the Christina River in Wilmington, Delaware (Figure 1). The property has most recently been operated as a salvage yard and is bordered by Garasches Lane to the north, Don Wilson's Auto Parts and A.M. Domino Salvage Yard to the west, and a ditch to the south and west. The A-1 Auto Parts Property is approximately 2.07-acre property consisting of one tax parcel (Tax Parcel #10-001.00-022). Surrounding land is generally commercial and/or industrial.

**Previous Site Uses:** Historical maps dating from 1876 through 1901 show the area of the A-1 Auto Parts Property as being mostly open land with a few small buildings such as houses or farm/out buildings. By 1936 the area was mostly open land, some of which is identified as marsh. According to area property owners, most of the land between Garasches Lane and the railroad tracks has been used for auto salvage since at least the early 1960s. In addition, many owners indicated that the land had been heavily filled prior to their purchase of the parcels.

It is possible that PCBs were introduced to the site as a result of the use of the property from past filling operations and/or as a salvage yard.

**Site Regulatory Status:** This section briefly summarizes previous investigations performed on the site through the SIRB program. A current SIRB regulatory status is also included.

### ***Environmental Assessment of the South Wilmington (East) Quadrants 1 and 2 Study Area (DNREC, 1996)***

DNREC completed the Environmental Assessment of South Wilmington (East), Quadrant 1 and 2 (DE-286) in 1996 which consisted of a large investigation effort performed by DNREC-SIRB to collect samples from various properties encompassing approximately 110 acres of South Wilmington. Quadrant 1 is the area between South Walnut Street and Buttonwood Street and is bordered to the north and south by B Street and Garasches Lane, respectively.

The Environmental Assessment investigation took place from July 17 through July 19, 1995. A total of 51 soil samples were collected through test pit excavation and borings, a total of 13 groundwater samples, 11 sediment samples and 10 surface water samples were collected from

the East Assessment Area. The following paragraphs summarize the samples collected on the A-1 Auto parts property as part of this investigation.

#### Soil Analytical Results

On the A-1 Auto Parts property, two test pits (TP-14 and TP-15) were excavated and two surface and two subsurface samples were collected. One boring (SS-8) was advanced and one surface soil sample collected. Samples TP-14S and TP-14D were field screened for metals and organic compounds using DNREC's Mobile Laboratory and were sent to DNREC's Division of Water Resources Laboratory for analysis. The following is a summary of DNREC's Division of Water Resources Laboratory results. Several inorganics including arsenic, barium, copper, lead, nickel and zinc were detected in TP-14S and TP-14D at concentrations exceeding the Risk Based Concentration (RBC) criteria or three times the background concentration. Toluene and xylene were detected in TP-14S at concentrations exceeding three times the background concentration. Two polycyclic aromatic hydrocarbons (PAHs) were detected in TP-14S at concentrations exceeding the RBC criteria. Four PAHs were detected in TP-14D at concentrations exceeding the RBC criteria. Several pesticides were detected in TP-14S at concentrations exceeding three times the background concentration. PCBs, including Aroclor-1254 and Aroclor-1260 were detected in TP-14S above three times the background concentration and the residential RBC criteria, respectively.

TP-15S, TP-15D and SS-8 were not sent to DNREC's Laboratory for analysis, but were screened using DNREC's Mobile Laboratory. In some cases, not all samples were screened for all compounds. Screening results are summarized in the following sentences. Lead was detected at a concentration of 1,738 mg/kg in SS-8 and 3,231 mg/kg in TP-15D. PCBs, PAHs, DDT, DDE and DDD were reported at concentrations less than 0.5 mg/kg in TP-15S, TP-15D and SS-8. Toxaphene was detected at concentrations greater than 0.5 mg/kg and less than 9.0 mg/kg in SS-8. Toxaphene was detected at concentrations greater than 0.5 mg/kg and less than 2.0 mg/kg in samples TP-15S and TP-15D. Gasoline range organics (GRO) was detected at concentrations greater than 100 mg/kg in TP-14S, TP-15S and TP-15D. Diesel range organics (DRO) was detected at concentrations greater than 1,000 mg/kg in samples TP-15S, TP-15D and SS-8.

One monitoring well, MW-4 was installed at the south east corner of the site between the locations of Test pits TP14 and TP-15. The well is located in an area of fill material near the property line bordering the north-south ditch. MW-4 was sampled and analyzed for total and dissolved target analyte list (TAL) parameters and target compound list (TCL) parameters at the DNREC Division of Water Resources Laboratory. Analytical results were compared to the



USEPA Region II RBC for Tap Water, EPA Drinking Water Maximum Contaminant Levels (MCL) and three times the concentration detected in the background well (MW-10 located at 522 South Market Street). Iron was detected in the filtered groundwater sample above the RBC and manganese was detected in the filtered groundwater sample at concentrations exceeding RBC criteria and background concentration. All other constituents were not detected at concentrations exceeding regulatory or background criteria.

One sediment sample SED-10 was collected at the southern portion of the property near the railroad tracks and analyzed for screening parameters at DNREC's mobile laboratory. Screening parameters included, PCBs, carcinogenic PAHs, toxaphene, DDT, DDE, DDD and other pesticides, volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs). The sample was then sent to DNREC's laboratory and analyzed for TCL/TAL parameters. Several inorganics including, antimony, barium, chromium, copper, lead, magnesium, nickel, zinc, manganese, iron and arsenic were detected at concentration which exceed either the RBC or background levels. Acetone was detected at a concentration of 0.044 mg/kg, which exceeds 3 times the background concentration of 0.006 mg/kg as stated in the report. Several PAHs, pesticides, and Aroclor-1260 were detected at concentrations exceeded either the industrial or residential RBC or Background criteria.

***Remedial Investigation Report South Wilmington Salvage Yards (Environmental Alliance, 2001)***

In November 2000, Environmental Alliance completed a Remedial Investigation (RI) on behalf of the South Wilmington Salvage Yards (SWSY). The SWSY RI involves eight properties (approximately 26 acres) in the vicinity of the Christina River in South Wilmington. The eight properties addressed by this RI include:

- A-1 Auto Parts
- Don Wilson's Auto Parts
- Merkin Auto Spring Co., Inc.
- Junior's Auto Parts
- Two Guys Auto Parts
- American Tank Trailer Cleaning Co.
- Casper's Auto Parts
- Shuster's Auto Salvage

During this investigation, a total of 30 surface soil samples and 4 deep soil samples were collected across the study area. The samples were field screened using a Photo Ionization



Detector (PID); submitted for screening at DNREC's laboratory for VOCs, SVOCs, metals, PCBs and pesticides; and select samples were submitted for confirmatory analysis at Lancaster Laboratories. The samples selected for confirmatory analysis were analyzed for VOCs, SVOCs, metals, PCBs/pesticides, ethylene glycol, tetraethyl lead, total petroleum hydrocarbons diesel range organics (TPH-DRO), volatile petroleum hydrocarbons (VPH), and/or extractable petroleum hydrocarbons (EPH). Additionally, synthetic precipitation leaching procedure (SPLP) and toxicity characteristic leaching procedure (TCLP) metals analysis was performed on select soil samples.

Groundwater samples were collected from four soil boring locations (GP02 at Two Guy's Auto Parts, GP-11 at Merkin Auto Springs Co., Inc., GP-14 at American Tank Cleaning Co., and GP-15 at Casper's Auto Parts). In addition, groundwater samples were collected from three of the four previously existing monitoring wells in the study region. The wells incorporated into this RI include MW-4 (A-1 Auto Parts), MW-5 (across the street from Don Wilson's Auto) and MW-7 (Shuster's Auto Salvage).

A total of seven sediment samples were collected from the potential tributary that transects Garasches Lane and the drainage ditch south of the A.M. Domino, A-1 Auto Parts, and Two Guys Auto Parts properties.

A total of five surface water samples were collected where surface water was present. The following is a summary of analytical results that were collected from the A-1 Auto Parts property as part of this investigation.

#### Soil Analytical Results

Several of the RI soil boring locations could not be sampled due to accessibility to those locations and/or subsurface material causing sample refusal. Two surface soil samples were collected from locations GP-16 and EX-06 at depths of 0.5 to 1 and 0.5 to 1.5 feet bgs, respectively. DNREC's laboratory screening results for both sample locations reported the presence of PAHs. All other organic screening results were not detected. GP-16 had concentrations of arsenic, chromium, iron, and lead above their restricted use URS levels and sample EX-06 had only arsenic above its restricted use URS level. All other metals were either not detected or below their respective URS level.

Soil sample EX-06 was selected to be analyzed by Lancaster Laboratories for TCL SVOCs, EPH, TPH-DRO, tetraethyl lead, and total arsenic and lead analysis. Only arsenic was detected



above its restricted use URS level. All other parameters were not detected or were below restricted use URS levels.

#### Groundwater Analytical Results

One groundwater sample was collected from the monitoring well MW-4 located on-site and was analyzed for TCL VOCs, TCL, SVOCs, EPH, glycols, tetraethyl lead, and total metals. Iron and manganese were detected above their respective URS. All other parameters analyzed for were not detected.

#### Sediment Analytical Results

Sediment samples, SED-A2 and SED-A6 were collected in the vicinity of the ditch on the southern end of the property. Screening results indicated the presence of PAHs, but no other organics. DNREC screening results for SED-A2 and SED-A6 showed arsenic, barium, chromium, copper, iron, lead, manganese, mercury, nickel, vanadium and zinc above their respective URS default background levels.

The sediment sample, SED-A6 was selected for total metals analysis at Lancaster Laboratories. The laboratory results for SED-A6 reported aluminum, arsenic, barium, copper, iron, lead, manganese, nickel, vanadium, and zinc at concentrations above their respective URS levels. All other laboratory results for this sample were reported as not detected or below URS levels.

#### Surface Water Analytical Results

The surface water sample collected at SW-A2 was analyzed for TCL VOCs, EPH, TPH-DRO, and dissolved metals. The SW-A6 sample was analyzed for TPH-DRO and dissolved metals. Lancaster Laboratories reported benzo(b)fluoranthene, C11 to C22 aromatics, and several metals above their respective default background levels for surface water and URS for surface water in sample SW-A2. Additionally, SW-A2 had very low concentration of TPH-DRO. Sample, SW-A6 reported non-detectable dissolved metals and a very low TPH-DRO concentration. All other analyzed parameters for these samples were either not detected or below HSCA URS levels.

#### **Current Regulatory Status:**

A Remedial Investigation Report for the South Wilmington Salvage Yards was submitted to DNREC SIRB on June 13, 2001. On May 10, 2002 DNREC issued a response letter requesting that Environmental Alliance collect and analyze more samples at the laboratory. Environmental Alliance attempted to negotiate with the property owners concerning additional laboratory fees, but no owners agreed. In 2001 DNREC issued a Memorandum of Agreement. This document



stated that a groundwater management zone shall be established in this area, no new public or domestic water supply wells shall be allowed or permitted, monitoring/observation/containment recovery wells may be installed in the GMZ area after review and approval, and permits may only be issued by the DWR and DAWM.



## SUMMARY OF SITE PCB INFORMATION

### Site Investigation PCB Findings:

PCBs were detected in one surface soil sample, TP-14S (0.5 feet bgs) at a concentration of 0.75 mg/kg which is below the total PCB URS criteria of 1 mg/kg. PCBs were not detected in any subsurface unsaturated soil. The subsurface saturated soil was reported to have less than 0.5 mg/kg of total PCBs at two locations, TP-15D and MW4A/B, via an immunoassay kit.

Due to the fact that there was only one detection in the surface soil, this detected value was used in the overland flow calculations instead of calculating the 95% UCL of the mean across the site. There were no PCBs detected in groundwater and there are no total PCBs above the 0.5 mg/kg detection limit of the immunoassay kit in the subsurface soil in contact with the groundwater (saturated soil). There were no quantified values found for the subsurface saturated soils, only immunoassay kit screening data.

Concentrations of PCBs on Site			
Sample Matrix	Corresponding Figure	Analytical Methods	Range of Total PCBs
Surface Soil	Figure 2	Method 8082 and Immunoassay Test Kits	Not detected to 0.75 mg/kg
Subsurface Soil (unsaturated)	Figure 3	Method 8082 and Immunoassay Test Kits	Not detected
Subsurface Soil (saturated)	Figure 4	Immunoassay Test Kits	Not detected
Ground Water	Figure 5	Method 8082	Not detected

A summary of all samples collected for PCBs are presented in the attached Tables 1 through 4.

### Acreage where PCBs detected:

The estimated surface soil area impacted by PCBs is 0.3 acres (Figure 2). There is no subsurface soil impacted by PCBs on the A-1 Auto Parts site.



**PCB Remediation Completed Status:**

The A-1 Auto Property has not been required to perform any remediation activities as of September 30, 2008.

## **PCB MASS LOADING SUMMARY**

The PCB mass loading rate to surface water via overland flow was estimated for the A-1 Auto Property. There were no reported concentrations of PCBs in the subsurface saturated zone or in the groundwater; therefore, groundwater transport is not considered a mechanism of transport for PCBs at the A-1 Auto Property. A summary of the results is included below and the details of the calculations are included as attachments to this Appendix.

### **Overland Flow:**

Overland flow has been determined on this site by using the Revised Universal Soil Loss Equation (RUSLE). The RUSLE predicts the long term average annual rate of erosion on an area based on rainfall patterns, soil type, topography, cover/canopy factors and support management practices. These factors are site-specific and require information pertaining directly to the site.

### **Ground Cover and Canopy:**

A site inspection was performed to estimate the current site ground cover and canopy on August 28, 2008. The evaluation incorporated the use of aerial photography as well as the site visit due to the limited access to the site. The cover/management factor (C) assigned to the site and associated flow path is 0.45 from the USGS RUSLE2 model, which corresponds to bare ground. Photographs were unable to be taken because the site is a private property.

### **Site Sediment and Erosion Control Practices:**

Currently there are no erosion and sediment controls in place at the A-1 Auto Parts site.

### **Input Factors and Results:**

A breakdown of the individual factors is presented below with a brief explanation of their choice.





<b>RUSLE Factors</b>	<b>Values</b>	<b>Explanation of Selection</b>
R = rainfall-runoff erosivity index (10 <sup>2</sup> ft-tonf-in/ac-hr)	170	An appropriate value for R for the site was determined from plots of Rainfall patterns for the Eastern U.S. (Wischmeier and Smith, 1978).
K = soil erodibility (0.01 tonf acre hr/acre ft-ton in)	0.316	The soil erodibility factor was chosen based on the information provided on the native soils. This information was collected from the boring logs of the DNREC's South Wilmington Assessment Quadrants 1 & 2 Report. The USGS model selected the value based on generalized soil type.
LS = topographic factor (dimensionless)	0.110	The slope length was estimated to be 245 feet, which is the distance between the centroid and the surface water along the overland flow path. The assumed slope (0.7 %) and slope length were used to calculate a topographic factor of 0.110.
C = cover/management factor (dimensionless)	0.450	The cover/management factor C was assigned to the site and associated flow path by the USGS windows based application was 0.450, which corresponds to bare ground.
P = support practice factor (dimensionless)	1.0	There are currently no sediment and erosion controls in place at the A-1 Auto Property.

The average annual erosion rate is based on the windows based RUSLE2 program (RUSLE2 License, version 2006-Jul-24).

Based on the calculations performed, the total PCB loading from the A-1 Auto Property to the Christina River via erosion under current site conditions is 0.4 grams per year.

#### Uncertainty Analysis Associated with Overland Flow

#### **Specific Areas and Degree of Uncertainty for the A-1 Auto Property**

	<b>Samples Per Acre (site)</b>	<b>Chemical Data Quality*</b>	<b>Topography</b>	<b>Soil Type</b>	<b>Site Coverage</b>	<b>Map Quality</b>	<b>Distance to Discharge Point</b>
<b>Site Specific Information</b>	2.4	Immunoassay and method 8082	Estimated using topography	Detailed logs that are located on-site	Based on aerial photography	Scaled Map	245
<b>Degree of Uncertainty</b>	Moderate	High	Moderate	Moderate	High	Moderate to High	Moderate

\* Primary analysis used in the historical samples



Areas of uncertainty for the A-1 Auto Property include the following: the only data reported for the subsurface saturated soils were from screening analysis. Due the restricted site access a thorough assessment of the property could not be conducted. Aerial photography was used to assess the land cover. In addition, concentrations of PCBs might be skewed low because of the presence of other contaminants on site. The boring logs reported a very strong gasoline odor in the soil, which could potentially hide the PCB concentrations. According to the "Ensys™ PCB Soil Test Kit, EPA Method 4020," soils containing high levels of petroleum fuels or transformer oil may interfere with results obtained using immunoassay techniques. Sample coverage of the site was not extensive, so areas of concern could not be confined to smaller areas because of data gaps. The analytical data reported by the laboratory indicated that the concentration in TP-14S was an estimated value. In these instances BrightFields treated these samples as a true detection. Based on these evaluations the overall level of uncertainty associated with PCB mass loading from the A-1 Auto Property is **moderate to high**.



**Site References:**

Environmental Alliance, 2001, Remedial Investigation Report, South Wilmington Salvage Yards  
June 13, 2001.

Delaware Department of Natural Resources and Environmental Control (DNREC) – Superfund  
Branch, 1996, Environmental Assessment of the South Wilmington (East) Quadrants 1 and 2  
Study Area, April 1996.



PCB Mass Loading  
A-1 Auto Parts  
SIRB ID: DE-1172  
Wilmington, Delaware



**BrightFields, Inc.**

## Figures





#### Legend

- Sediment Sample Location
- Soil Boring Location
- Test Pit Location
- Well Location
- Tax Parcel
- A-1 Auto Parts Property Boundary

Total Site Area= 2.07 acres



**BrightFields, Inc.**

Environmental Evaluation  
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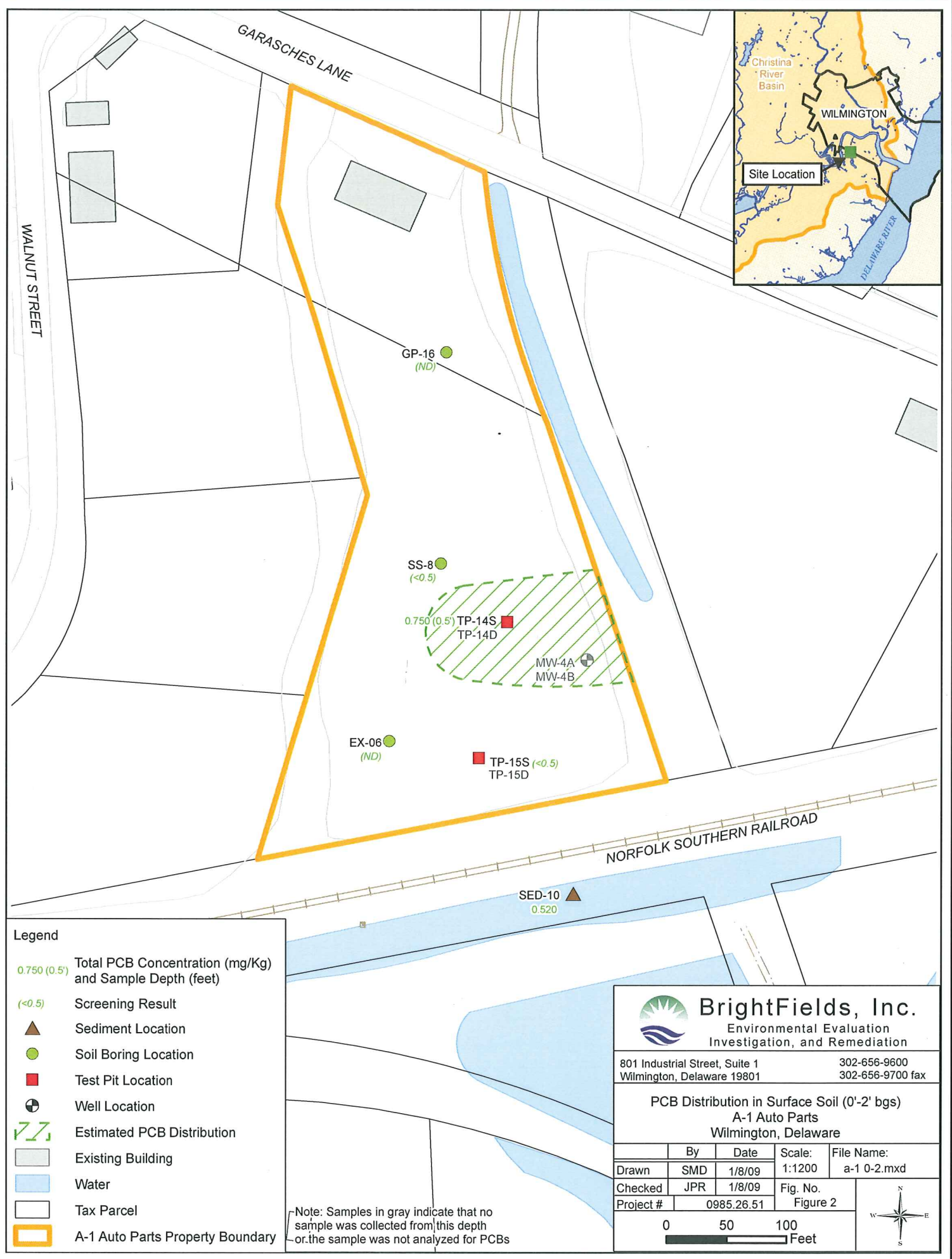
Historic Sample Locations and  
Aerial Photograph (2007)  
A-1 Auto Parts  
Wilmington, Delaware

	By	Date	Scale:	File Name:
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Project #	0985.26.51		Figure 1	

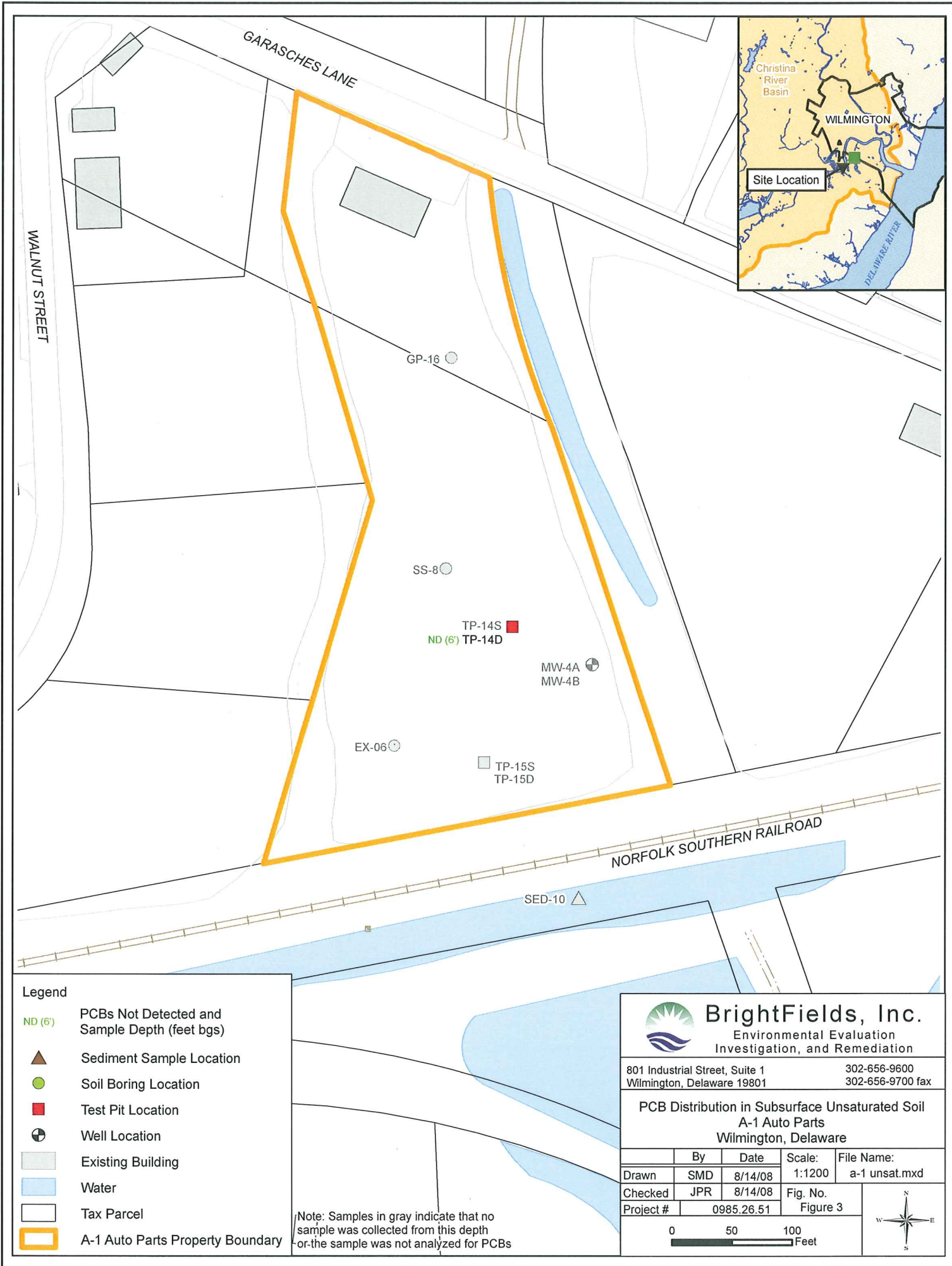
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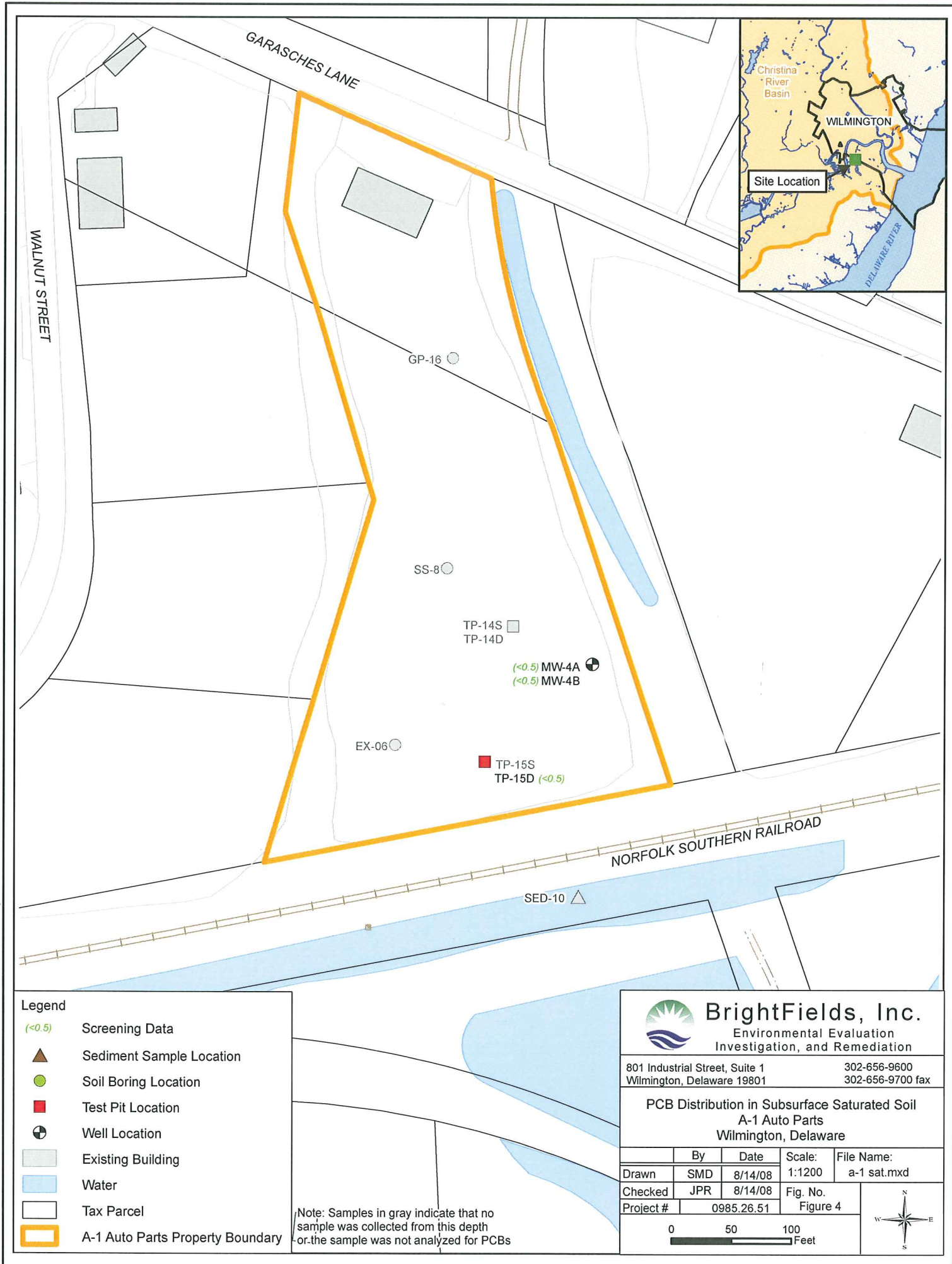




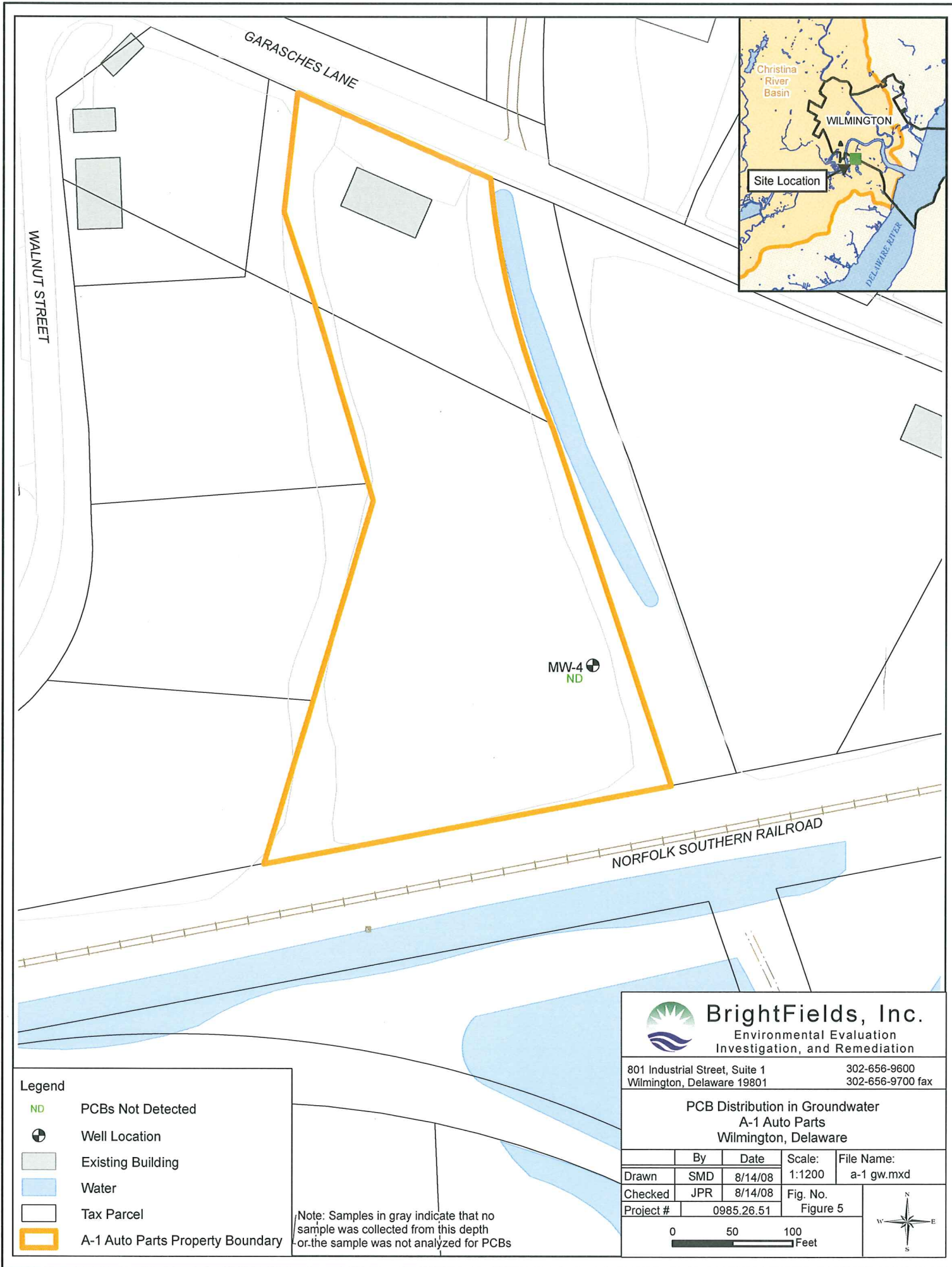




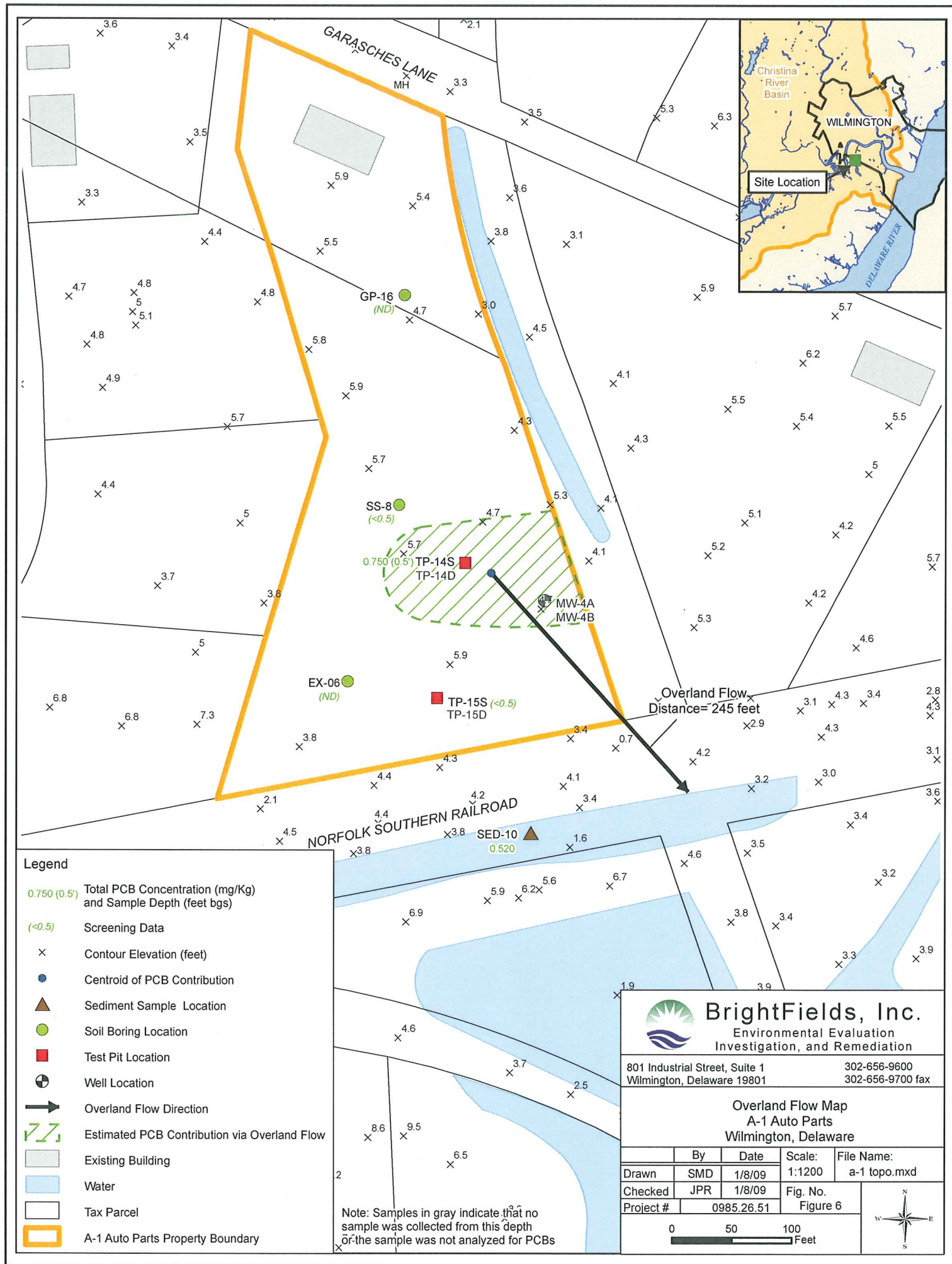












PCB Mass Loading  
A-1 Auto Parts  
SIRB ID: DE-1172  
Wilmington, Delaware



**BrightFields, Inc.**

# Tables

Table 1  
PCB Analytical Results For Soil  
A-1 Auto Property  
Wilmington, DE  
SIRB ID: DE-1172

Sample ID Sampling Depth (feet bgs) Sampling Date Units Report Issued	DNREC URS for Protection of Human Health Non-critical Water Resource Area		TP14-S 0.5 7/17/95 mg/Kg DNREC (1998)	TP14-D 6.0 7/17/95 mg/Kg DNREC (1998)
	mg/Kg			
	Unrestricted Use	Restricted Use		
PCBs				
Aroclor-1016	5	82	0.037 U	0.043 U
Aroclor-1221	0.3	3	0.037 U	0.086 U
Aroclor-1232	0.3	3	0.037 U	0.043 U
Aroclor-1242	0.3	3	0.037 U	0.043 U
Aroclor-1248	0.3	3	0.037 U	0.043 U
Aroclor-1254	0.3	3	0.340 J	0.043 U
Aroclor-1260	0.3	3	0.410 J	0.043 U

DNREC (1998) - South Wilmington Assessment Quadrants 1 & 2

Qualifiers

U - The compound was not detected above the indicated laboratory detection limit  
 NR - Not analyzed  
 nca - no criteria available  
 bold - concentration is above DNREC URS unrestricted use criteria  
 shaded - concentration is above DNREC URS restricted use criteria  
 J - The concentration given is an approximate value.



Table 2  
PCB Analytical Results For Groundwater  
A-1 Auto Property  
Wilmington, DE  
SIRB ID: DE-1172

Sample ID Sampling Date Units Report Issued	DNREC URS for Protection of Human Health ug/L	MW04 8/1/95 ug/L DNREC (1998)
<b>PCBs</b>		
Aroclor-1016	0.1	ND
Aroclor-1221	0.03	ND
Aroclor-1232	0.03	ND
Aroclor-1242	0.03	ND
Aroclor-1248	0.03	ND
Aroclor-1254	0.03	ND
Aroclor-1260	0.03	ND

DNREC (1998) - South Wilmington Assessment Quadrants 1 & 2

Qualifiers

U - The compound was not detected above the indicated laboratory detection limit

NR - Not analyzed

nca - no criteria available

bold - concentration is above DNREC URS unrestricted use criteria

shaded - concentration is above DNREC URS restricted use criteria

ND - compound was not detected

Table 3  
DNREC PCB Screening Data  
A-1 Auto Property  
Wilmington, DE  
SIRB ID: DE-1172

Sample ID	Sample Depth	Investigation Report	Sample Date	DNREC URS for Protection of Human Health (Non-critical Water Resource Area) Unrestricted Use (mg/kg)	Total PCBs (mg/kg)
SS-8	0'-0.25'	DNREC (1998)	7/17/95	1	<0.5
TP-15S	0.84'	DNREC (1998)	7/17/95	1	<0.5
MW-4A	8'-9'	DNREC (1998)	8/1/95	1	<0.5
MW-4B	18'-20'	DNREC (1998)	8/1/95	1	<0.5
GP-16	0.5'-1'	EA (2001)	11/22/00	1	ND
EX-06	0.5'-1.5'	EA (2001)	11/30/00	1	ND
TP-15D	6'	EA (2001)	11/30/00	1	<0.5

DNREC (1998) - South Wilmington  
Assessment Quadrants 1 & 2

EA (2001) - Salvage Yards Remedial  
Investigation Report. Environmental  
Alliance 2001.

Qualifiers:

ND - compound was not detected

Bold - concentration exceeds URS

nca - no criteria available

PCB Mass Loading  
A-1 Auto Parts  
SIRB ID: DE-1172  
Wilmington, Delaware



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## **Site Photographs (Not Applicable)**



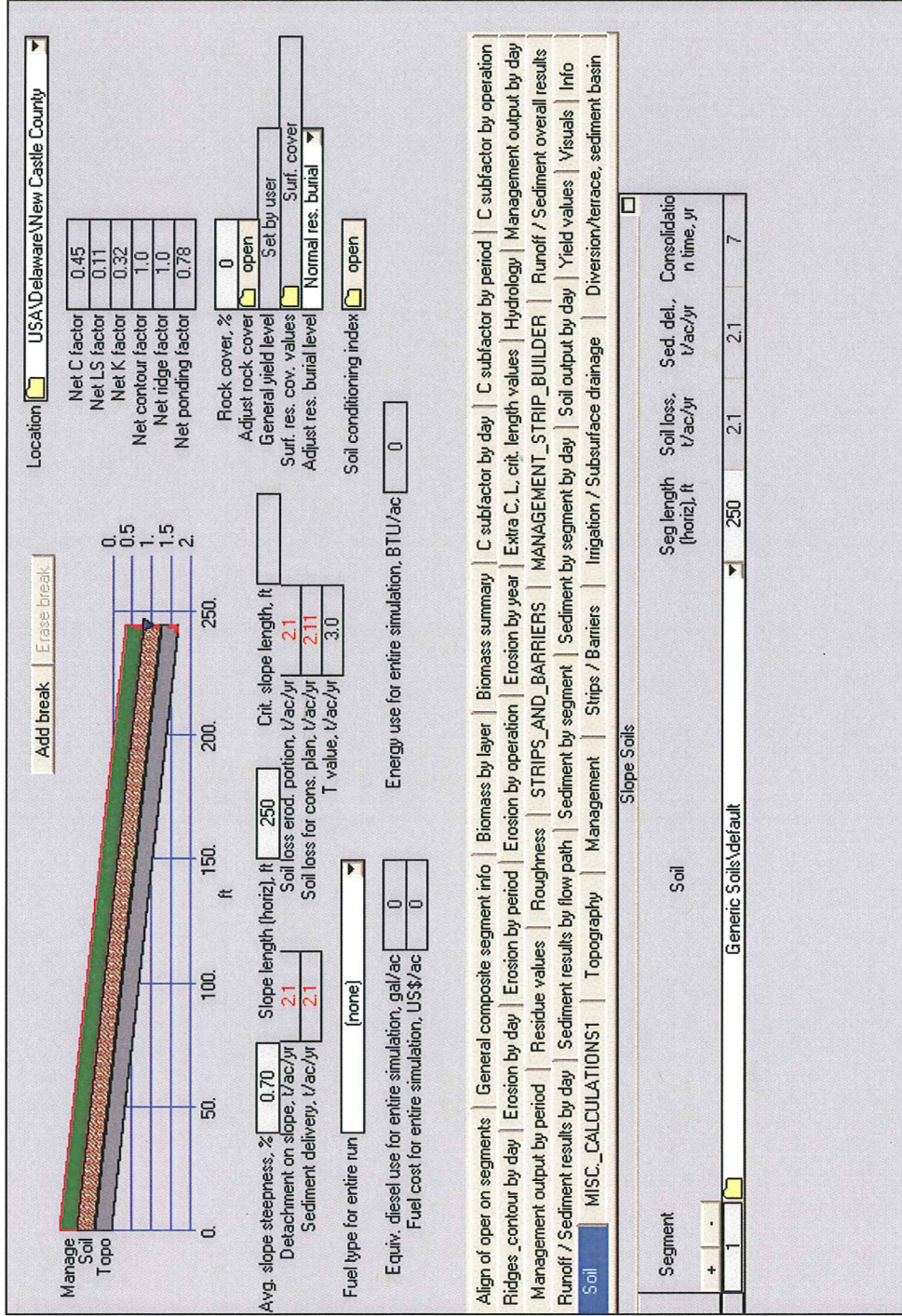
PCB Mass Loading  
A-1 Auto Parts  
SIRB ID: DE-1172  
Wilmington, Delaware



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# **Overland Flow Calculations**

## A-1 Auto Overland Flow Calculations



**PCB Loading Calculations from the Revised Universal Soil Loss Equation**  
**A-1 Auto Property**  
**Wilmington, DE**  
**DE-1172**

Surface PCB Concentration 0.75 mg/kg

Symbol	Factor	Value	Units
R	Rainfall/Runoff Erosivity Index	170	10 <sup>2</sup> ft-tonf in/acre hr
K	Soil Erodibility	0.316	0.01 tonf acre hr/ac ft-ton in
	Estimated Slope Length	245	Feet
	Estimated Elevation Difference	1.8	Feet
	Slope	0.7	Percent
	Erodeable Area	0.3	Acres
LS	Topographic Factor	0.110	Dimensionless
C	Cover and Management Factor	0.45	Dimensionless
P	Support Practice Factor	1	Dimensionless
	Average Annual Soil Loss	2.10	ton/ac/yr

PCB Loading via Overland Flow 0.429 grams/year - PCBs